

*Polystoma boletiformis, simplex, elongata, lobata, contorta, irregularis, ambigua, &c.*, Court. Ep. xii. 5, 6, xiii. & xiv. Senonian.

META, Pom.

(Ib. p. 188.)

Sponge cylindrical, clavate or nearly globular. Oscula scattered in the vertex. Miocene, Oran.

MARISCA, Pom.

(Ib. p. 192.)

Sponge from pyriform to globular, with a radiated pit in the vertex, into which a bundle of fine excurrent tubes opens. Surface with scattered large pores. Miocene, Oran.

[To be continued.]

## PROCEEDINGS OF LEARNED SOCIETIES.

### GEOLOGICAL SOCIETY.

June 5th, 1878.—John Evans, Esq., D.C.L., F.R.S., Vice-President, in the Chair.

The following communications were read:—

1. "On the Affinities of the Mosasauridæ, Gervais, as exemplified in the Bony Structure of the Fore Fin." By Prof. Owen, C.B., F.R.S., F.G.S., &c.

In this paper the author commenced by discussing the opinions expressed by different anatomists as to the indications of relationship furnished by the structure of the fore limb, and stated that in 1851 he had referred *Mosasaurus* to a tribe Natantia, of the order Lacertilia. Since then Prof. O. C. Marsh has published a reconstruction of the fore limb of the Mosasauroid *Lestosaurus simus*; and from a comparison of his figure with the bones of the same parts in Cetacea, Plesiosauria, and Lacertilia, the author showed that the resemblance in structure was closest with the last-named type, of which the fore foot of *Monitor niloticus* was taken for comparison. In the relative length of the digits and the number and form of the phalanges the Mosasauroid fore foot was shown to agree most nearly with the Lacertilian type. With regard to the presence of a zygosphenes and zygantrum in vertebræ of *Clidastes*, cited by Prof. Cope in favour of his approximation of the Mosasaurs to the Ophidia and his establishment of the order Pythonomorpha, the author remarked that the trunk-vertebræ of the Iguanidæ show zygosphenes and zygantrum, but with modifications which serve to distinguish the

Ignavian from the Ophidian vertebræ, and that, until we have the opportunity of comparing the Mosasauroid vertebræ with those of both these types, the mere presence of these parts cannot be accepted as conclusive.

2. "On new Species of *Procolophon* from the Cape Colony, preserved in Dr. Grierson's Museum, Thornhill, Dumfriesshire; with some Remarks on the Affinities of the Genus." By Harry Govier Seeley, Esq., F.L.S., F.G.S., &c., Professor of Geography in King's College, London.

The species described by the author were named by him *Procolophon Griersoni*, *P. spheniceps*, and *P. platyceps*; they are represented by skulls imbedded in a hard red ironstone matrix, apparently concretionary, and were collected at Donybrook, Queenstown district, Cape colony.

With regard to the systematic position and affinities of *Procolophon*, the author remarked that the presence of two distinct nares shown in his specimens, removed the genus from the family Mononariaia, of the order Theriodontia, in which it was placed by its founder, Prof. Owen. He further discussed in considerable detail the characters upon which the order Theriodontia is founded, and arrived at the conclusion that this group must be regarded as synonymous with the family Cynodontia, which, with the Dicynodontia and Cryptodontia, make up Prof. Owen's order Anomodontia. The genus *Procolophon*, displaying no distinguishable canines, does not possess the chief character of a Cynodont; and the author preferred to regard it as belonging to a parent type from which the dental modifications of the Anomodontia have been derived, and, from its apparent relationship to *Hatteria*, as forming an extinct family of the Rhynchocephala. Hence the question arises, whether the Anomodontia and the South-African forms described as Dinosaurs might not be united with the Rhynchocephala to form a subclass of Reptilia.

3. "On the Microscopic Structure of the Stromatoporidæ, and on Palæozoic Fossils mineralized with Silicates, in illustration of *Eozoon*." By Principal Dawson, LL.D., F.R.S., F.G.S.

The fossils included in the group Stromatoporidæ occur from the Upper Cambrian to the Upper Devonian inclusive, and are especially abundant in the Trenton, the Niagara, and Corniferous formations. The author regards *Stromatopora* as a calcareous, non-spicular body, composed of continuous, concentric, porous laminae thickened with supplemental deposit, and connected by vertical pillars, most of which are solid. The surface shows no true oscula; but perforations made by parasitic animals have been mistaken for such. From the structure, they cannot have been related either to Sponges or to *Hydractinia*, and still less to Corals; they are truly Foraminiferal, and

may be regarded as the Palæozoic representatives of *Eozoon*. *Stromatopora* occurs infiltrated with calcite or silica, or with its structure wholly or in part replaced by crystalline silica or dolomite. The author concluded his first section with the characters of the genera which have been included in the *Stromatoporidae*.

In the second part he noticed a number of facts relating to the occurrence of hydrous silicates, of the nature of serpentine and loganite, infiltrating palæozoic fossils and illustrating the mode of occurrence and mineralization of *Eozoon*. Instances of this kind were said to be exceedingly common, showing that such silicates, whether originating as direct deposits from water, or as products of the decomposition of other minerals, are efficient agents in the infiltration of the pores and cavities of fossils, and have played this part from the earliest geological periods.

4. "On some Devonian *Stromatoporidae*." By A. Champernowne, Esq., F.G.S.

The author's object in this note was to give some account of the origin of a fine series of *Stromatoporidae* presented by him to the Society. They were all from the Great Devon Limestone at Dartington, near Totnes, and were obtained from a spot in the Pit-Park Quarry, where the dolomitic rock, instead of being hard and crystalline, is friable and almost sandy. The *Stromatoporidae* appear to have grown in the position in which they are found. They can be traced for a few yards from the friable portion of the rock, but gradually become merged in the crystalline rock; and then their internal structure is obliterated. The author noticed the various Corals, Crinoids, and Brachiopods which occur associated with the *Stromatoporidae*. The author regarded the *Stromatoporidae* as a somewhat heterogeneous mixture of organisms, but did not believe that they were, as had been asserted, originally siliceous. Some seem clearly to be of a structure like that of the *Milleporidae*. With regard to *Caunopora placenta* (Lonsd.) the author quoted Prof. Phillips's remarks as to the characters of the tubes traversing its mass. He had observed in sections from near Teignmouth, that the axis of the tube is lamelliferous, giving some appearance of a columella.

Prof. DUNCAN expressed his belief that many different forms were united under the one head of *Stromatopora*, and that the confusion was often due to the mode of mineralization. He called attention to a *Smithia* exhibited, which, by destructive mineralization, had assumed a deceptive resemblance to *Stromatopora*. He thought this had been the case in some of Mr. Lonsdale's specimens. The tubules in the laminæ of *Stromatopora* certainly had much resemblance to the tubules of *Millepora*. Some of the specimens exhibited seemed to have openings like calices; as they opened into the cœnenchyma, they could not be corals. The cross tubules excluded them from *Polyzoa*. They showed no true supplemental skeleton, or

nummuline layer like *Eozoon*; and so he doubted their Foraminiferal character. With regard to the mineralization, he had some years before received specimens of fossils from Canada, which Dr. Dawson's description had recalled to his mind.

MR. CHAMPERNOWNE described the tubular structure which he had observed in some of the Stromatoporidæ from Devonshire, both in the horizontal and vertical sections, and felt certain that the group contained many different forms. He had never seen Eozoonal structure in the Devonshire fossils.

Dr. MURIE stated that some specimens which he had seen resembled the Hexactinellidæ, and he thought they represented sponges, not precisely Hexactinellids.

5. "On a new Species of *Loftusia* from British Columbia." By George M. Dawson, D.Sc., F.G.S., Assoc. R. S. M., of the Geological Survey of Canada.

The specimens on which the genus *Loftusia* was founded in 1869 were brought from Persia by Mr. Loftus; and the rock from which they were derived was conjecturally assigned to the earliest Tertiaries. The species now described (*L. columbiana*) is found in a limestone probably of Carboniferous age, and occurs in the banks of Marble Cañon, Frazer River. This limestone appears to be very thick, but may be repeated by folds. Crinoidal columns and *Fusulina* have been sparingly found in it. Where the *Loftusia* is abundant it becomes almost the sole fossil; and it sometimes occurs as numerously as *Globigerine* in the Atlantic ooze.

*Loftusia columbiana* differs from *L. persica* in size, its longer diameter averaging about 0·3 inch, and its shorter one 0·19–0·2 inch. No regular furrowing of the outer surface has been observed, but some specimens show a tendency to acervuline growth. The structure is very like that of *L. persica* as described by Mr. Brady, although the nucleus is not quite so distinctly cancellated; the test consists of a primary layer coiled upon itself, with "secondary" septa very oblique to it, and "tertiary" columns expanding at the outer ends into cross-like "rafters," supporting the roof formed by the primary lamina. A loose cancellated growth also depends from the roof between these rafters, analogous to a more regular structure observed in *L. persica*. The usual number of convolutions is about 10; but as many as 17 have been observed.

June 19, 1878.—Prof. Prestwich, M.A., F.R.S., Vice-President,  
in the Chair.

The following communications were read:—

1. "On *Pelamæchinus*, a new Genus of Sea-urchin from the Coral Rag." By W. Keeping, Esq., B.A., F.G.S., Professor of Geology in the University College of Wales.

In 1855 an Echinid was described by Dr. T. Wright, from very fragmentary specimens, under the name of *Hemicidaris corallina*.

Since that date two very fine specimens have been obtained, both from Calne—one by Mr. Keeping, sen., now in the Woodwardian Museum, Cambridge, the other in Dr. Wright's collection. These show the affinities of the Echinid to be rather with the Echinothuriidæ. The author regards this species as the type of a new genus, which he names *Pelanechinus*, and characterizes as follows:—

*Test* thin, circular, depressed, consisting of (1) transversely elongated coronal plates, (2) apical plates, (3) an actinal system of imbricating plates around the mouth. *Interambulacral areas* narrow at poles, but rapidly broadening towards the equator, with 6–8 rows of primary tubercles; the plates narrow, contour rounded, slightly undulating. *Ambulacral areas* more uniform, equal to  $\frac{1}{3}$  of the greatest breadth of interambulacral areas, with two rows of primary tubercles; poriferous zones broad; pores trigeminal in the equatorial region. *Primary tubercles* rather small, smooth, perforated, uniform over both areas; spines small, hollow. *Peristome* deeply notched. *Actinal area* about  $\frac{3}{8}$  of whole test, covered with zones of large imbricating plates, with perforations and perforated tubercles. *Jaws* large and powerful.

This Echinid has a marked similarity of appearance to *Asthenosoma* (*Calveria*); and the author believes that it also had a flexible test.

2. "Remarks on *Saurocephalus*, and on the Species which have been referred to that Genus." By E. Tulley Newton, Esq., F.G.S., of H.M. Geological Survey.

In this paper the author gives an account of those species of fossil fishes from American and British Cretaceous strata which have been referred to the genus *Saurocephalus*, originally founded by Harlan in 1830, and regarded by him as showing Reptilian affinities. The ichthyic nature of the species first described, *S. lanciformis*, Harl., was demonstrated by Prof. Owen. By Agassiz and Dixon certain large fossil teeth from the White Chalk of Lewes were identified with *Saurocephalus lanciformis*; and the latter also figured an elongated rostrum as belonging to this fish. Dr. Leidy, in 1856, re-described the original specimen of *Saurocephalus lanciformis*, and maintained that the jaws and teeth figured by Dixon do not belong to the genus *Saurocephalus*; he proposed for them the new name of *Protosphyreua ferox*. He thought also that the rostrum figured by Dixon belonged to a Sword-fish, and named the species *Xiphias Dixoni*. Specimens since obtained by Prof. Cope in America have proved that the rostrum and teeth actually belonged to the same fish, for the reception of which and of some American species Prof. Cope established the genus *Erisichthe*. The author maintains that Dr. Leidy's name, *Protosphyreua*, must be adopted for this genus, which will include the British *Protosphyreua ferox* (= *Erisichthe Dixoni*, Cope) and the American species, *P. angulata*, *nitida*, *penetrans*, and *ziphioides* (Cope). The characters of these species are discussed by the author. The species known on the Continent as

*Saurocephalus albensis* and *influens*, Pict. et Camp., *S. dispar*, Héb., and *S. inæqualis* and *substriatus*, Münst., are founded on isolated teeth; and their affinities are regarded by the author as doubtful. *Saurodon Leanus*, Hayes, from the Greensand of New Jersey, belongs to *Saurocephalus*, which also includes a species described by Prof. Cope under the name of *S. arapahovius*. Teeth erroneously referred by Agassiz to *Saurodon Leanus* were regarded by Dr. Leidy as representing a new genus and species, *Cimolichthys levesiensis*; and to this last-named genus the author refers *Spinax marginatus*, Reuss, and, doubtfully, *Saurocephalus striatus*, Ag.

3. "On some well-defined Life-zones in the Lower Part of the Silurian (Sedgw.) of the Lake-district." By J. E. Marr, Esq. Communicated by Prof. T. M'K. Hughes, M.A., F.G.S.

This paper treats of the zones of fossils occurring between the Coniston Limestone and Coniston Grits, with a view to establishing a boundary between the Cambrian and Silurian formations. In the lake-district beds the genus *Phacops* is very abundant, one or more species of its subgenera characterizing each fossiliferous formation. The zones thus indicated are found to hold good when the organic remains as a whole are considered. The author separates the Ashgill shales from the Coniston Limestone, giving separate lists of fossils to show the palæontological difference—from which it appears that but few (and those the very common Bala fossils) are common to both, while the most characteristic Ashgill fossils do not occur in the Coniston Limestone. They indicate that the Ashgill formation is Upper Bala. It is very irregular in thickness; and the author thinks this due to an unconformity above the Ashgill beds. Here the author agrees with Prof. Hughes in placing the base of the Silurian. He gives lists of the fossils in the basement bed and the Stockdale Shales, and points out that their facies is distinctly Silurian. Very few fossils are common to them and the Coniston Limestone or Ashgill Shales. Hence there is here both a physical and a palæontological break; so that the division between Cambrian and Silurian should be placed at this horizon. A detailed description (with lists of fossils) is given of the Coniston Flags and Coniston Grits. An appendix contains some palæontological notes on some species of the genus *Phacops*.

#### MISCELLANEOUS.

*On the Parasitic Isopoda of the Genus Entoniscus.*

By M. A. GIARD.

THE singular parasitic Isopods discovered and described by Fritz Müller under the generic name of *Entoniscus*, have hitherto been detected only on the coast of Brazil. I have to indicate the exis-